

Colorado Early Childhood Obesity Prevention
Summary of The Colorado 2011 Early Childhood Obesity Prevention Report

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PURPOSE

The purpose of this project was to identify factors associated with early childhood obesity prevention, determine which factors have the greatest levels of evidence, identify existing efforts throughout Colorado, identify gaps, and explore how Colorado programs can strategically leverage and invest resources to prevent early childhood obesity. The results of this project will inform the focus of the Colorado Department of Public Health and Environment's (CDPHE) work related to early childhood obesity prevention efforts. This document is a summary of selected findings. [Click here to access the full report](#) (appendices available upon request).

BACKGROUND

Early childhood health is foundational to health throughout the life course. Good health in the earliest years of life is also associated with improved learning and school readiness. Childhood obesity poses a significant challenge to those who work with and care for young children and their families. Mounting evidence points to the importance of intrauterine life, infancy and the preschool years to establish long-term regulation of energy balance.

The Centers for Disease Control and Prevention's (CDC) Pediatric Nutrition Surveillance System (PedNSS) is a nationally compiled obesity surveillance system using data obtained at the state and local level for low-income children participating in federally funded maternal and child health and nutrition programs. In Colorado, PedNSS data specifically reflects health indicators of children served by the Supplemental Food Program for Women, Infants, and Children (WIC). The 2010 PedNSS indicates that 9.1% of Colorado's low income children, ages 2-5 years are obese (BMI greater than the 95th percentile) and an additional 14.1% of these children are overweight (BMI between the 85th and 95th percentile). Between 2001 and 2005, the percentage of low income children, ages 2-5 years who were overweight or obese increased from 21.3% to 24.7%. This prevalence remained stable through 2007, then slightly declined to 23.2% by 2010. Identifying effective interventions that encompass behavioral, environmental and policy strategies is key to addressing and preventing the problem of child obesity.

Several factors are associated with childhood overweight and obesity. However, there is little guidance on effective, comprehensive approaches to prevent children from becoming overweight or obese. Identifying effective interventions that encompass behavioral, environmental and policy strategies is key to addressing and preventing the problem of childhood obesity.

FOUNDATIONAL WORK

Three studies, funded by CDPHE, contributed to, and informed the work of this project.

Medical Provider Scan

In 2007, Dr. Kathryn Bird conducted a review of evidence-based health care provider interventions, assessing perceived barriers for intervention by health care providers regarding childhood obesity. Recommendations from this study included increased education of health care providers on body mass index (BMI) and increased use of BMI charts by health care providers. In addition, Bird recommended a statewide assessment of provider interventions for childhood obesity, as well as the development of intervention programs for communities.

Staff Perceptions Survey and Interviews

In 2008, Joy Markuson surveyed child care providers and conducted interviews investigating attitudes, perceptions and preferences regarding the early childhood nutrition and physical activity environment rating system and training. Markuson recommended engaging early childhood program staff members in developing a nutrition and physical activity rating system and providing training opportunities that match their topics of interest. Markuson also recommended exploring parent perceptions toward nutrition and physical activity rating systems, as well as resources for child care providers to implement recommended changes.

Child Care Provider Environmental Scan

In 2009, using the Colorado Child Care Champions Best Practices, Dr. Cynthia Gillette Dormer conducted non-randomized interviews with child care providers in Colorado to identify existing childhood obesity prevention programs focused on child care settings and explored barriers to additional prevention efforts. Dormer recommended increasing participation in the Child and Adult Food Program, providing a forum for providers to share prevention programs and assisting child care providers with evaluation of existing prevention efforts.

PROJECT SCOPE

Building upon the foundational studies, as well as efforts external to Colorado, CDPHE and contractor Colleen Domer conducted a three-phased early childhood obesity prevention project. *Phase I* included a comparative analysis of the Colorado Child Care Champions Best Practices and other recommendations and guidelines, as well as a thorough review of the literature. In *Phase II*, two survey tools were developed to inventory early childhood obesity prevention efforts in Colorado and identify gaps. *Phase III* involved a Stakeholder Meeting to discuss the evidence, Colorado's existing efforts, and future priorities to guide the CDPHE in determining the focus of its work related to early childhood obesity prevention.

Phase I: Analysis of Best Practices and Literature Review

Phase I Methods

The Colorado Child Care Champions Best Practices (CCCBP) is a resource to guide child care providers in promoting nutrition and physical activity in child care settings. In Phase I, an analysis of the CCCBP was conducted, comparing them to guidelines, recommendations and best practices adopted by other state and national programs. Next, a literature review was completed to identify the evidence base for several CCCBP recommendations, as well as other targeted factors and behaviors. The American Dietetic Association's (ADA) Evidence Analysis Manual was used to determine the grade level of the evidence for each of the 25 factors reviewed. Strength of evidence grades include:

- I - Good/Strong
- II - Fair
- III - Limited/Weak
- IV - Expert Opinion Only
- V - Grade Not Assignable.

Evidence summary statements, quality, consistency, quantity, impact, ability to generalize and grade of evidence for each research question were summarized to determine evidence grade based on research articles identified between October 2009 and January 2010. Factors were grouped by category by natural association in the literature (Prenatal, Lifestyle, Infant Feeding Practices, Energy Intake, Energy Output, and Family and Community) and by age cohort (Prenatal, age 0-2 years and age 3-5 years) to evaluate the evidence base.

Phase I Results

There is no single factor that causes obesity. It is the interaction among genetic, environmental and behavioral factors that can lead to an imbalance in caloric intake and energy expenditure and result in obesity. The body of evidence supporting these factors as effective intervention strategies varies greatly.

1. Genetic Factors

An individual's susceptibility to excess weight gain may be increased based on genetic characteristics. However, the genetic characteristics of humans have not changed in the past three decades; therefore it is more likely the contribution of environmental and behavioral factors in conjunction with genetic susceptibility that has led to the rise in childhood obesity.

2. Behavioral Factors

The following risk factors were identified as related to early childhood obesity prevention and therefore reviewed. Strength of evidence for each factor is a grade level I, II, III, or IV.

- a. *Parenting Behaviors, III:* Limited evidence suggests a relationship between parenting behaviors and childhood overweight and obesity.
- b. *Smoking, II:* Maternal smoking during pregnancy may be related to an increased risk for early childhood obesity.

- c. *Sleep Duration, I*: Shorter sleep duration may be independently associated with childhood overweight and obesity.
- d. *Infant Feeding Practices, II*: Infant feeding practices, specifically strategies sensitive to children's hunger and satiety cues, may be associated with child overweight and obesity.
- e. *Breastfeeding, II*: Breastfeeding is associated with a reduction in childhood obesity risk. A dose-dependent association exists between longer duration of breastfeeding and a decrease in risk of overweight. Exclusive breastfeeding also appears to be protective.
- f. *Food Preferences, II*: Food preferences may be associated with an increased risk of childhood overweight and obesity. Practical advice for parents includes how to foster children's preferences for healthy foods and how to promote acceptance of new foods by children.
- g. *Portion Sizes, II*: Portion size may be associated with an increased risk of childhood overweight and obesity. By the end of the preschool period, the amount of food offered influences children's food intake.
- h. *Breakfast Consumption, III*: There is a fair amount of evidence that consumption of breakfast may be associated with childhood overweight and obesity. Breakfast eaters generally consumed more daily calories, yet were less likely to be overweight.
- i. *Fruit and Vegetable Intake, III*: There is a fair amount of evidence that intake of fruits and vegetables (FV) is inversely related to adiposity in children.
- j. *Sweetened Beverages Intake, II*: Intake of sugar-sweetened beverages (SSB) is positively related to adiposity in children. Most studies suggest that the effect of SSB is small except in susceptible individuals or at high levels of intake.
- k. *Juice Intake, II*: Consumption of 100% fruit juice is not associated with child overweight/obesity unless consumed in large quantities (> 12 oz). Increased beverage consumption was associated with an increase in the total energy intake of the children but not with their BMI.
- l. *Total Energy Intake, II*: Total energy (caloric) intake does not appear to have a strong association with overweight in children.
- m. *Eating Out, IV*: There is insufficient evidence to determine whether eating out is associated with an increased risk of early childhood overweight and obesity.
- n. *Physical Activity, II*: Participation in regular physical activity is associated with lower adiposity in youth. This association is stronger in boys than in girls. Children who spent more time outdoors were more active than children who spent less time outdoors.

3. *Environmental Factors*

Home, child care, school and community environments can influence children's behaviors related to food intake and physical activity (IOM, 2005). Strength of evidence for each of the following factors is a grade level I, II, III, or IV.

- a. *Screen Time and Marketing, II*: Excessive television viewing may be associated with increased adiposity in youth. Excessive use of video games may be associated with increased adiposity in youth.
- b. *The Built Environment, III*: There is limited evidence that the built environment may be related to childhood overweight and obesity.
- c. *Access to Healthy Foods, III*: There is limited evidence to determine the relationship between access to healthy foods and risk of early childhood overweight and obesity.

- d. *Child care, III*: There is limited evidence that there is a relationship between child care and childhood overweight and obesity.
- e. *Policy Change, IV*: There is insufficient evidence to determine the relationship between policy change and childhood overweight and obesity.

4. Other Factors

The following factors were also reviewed as risk factors for childhood overweight and obesity. Strength of evidence for each factor is a grade level I, II, III, or IV.

- a. *Birth Weight, I*: Birth weight at both ends of the spectrum (low and high birth weight) increase the risk of early childhood obesity.
- b. *Weight gain age 0-2 years, I*: Rapid weight gain within the first two years of life increases the risk for child overweight and obesity.
- c. *Pre-pregnancy BMI, I*: Maternal pre-pregnancy BMI is associated with early childhood obesity. Among low-income children, maternal obesity in early pregnancy more than doubles the risk of obesity at 2 to 4 years of age.
- d. *Parental Overweight, II*: Parental overweight is a major risk factor for childhood overweight in the first years of life.
- e. *Gestational Weight Gain, I*: Excessive weight gain during pregnancy is a risk factor for early childhood obesity.

Figure 1. Grade Level of Evidence by Category

Evidence Levels: Level 1 – Good; Level 2 – Fair; Level 3 – Limited/Weak; Level 4 – Expert Opinion

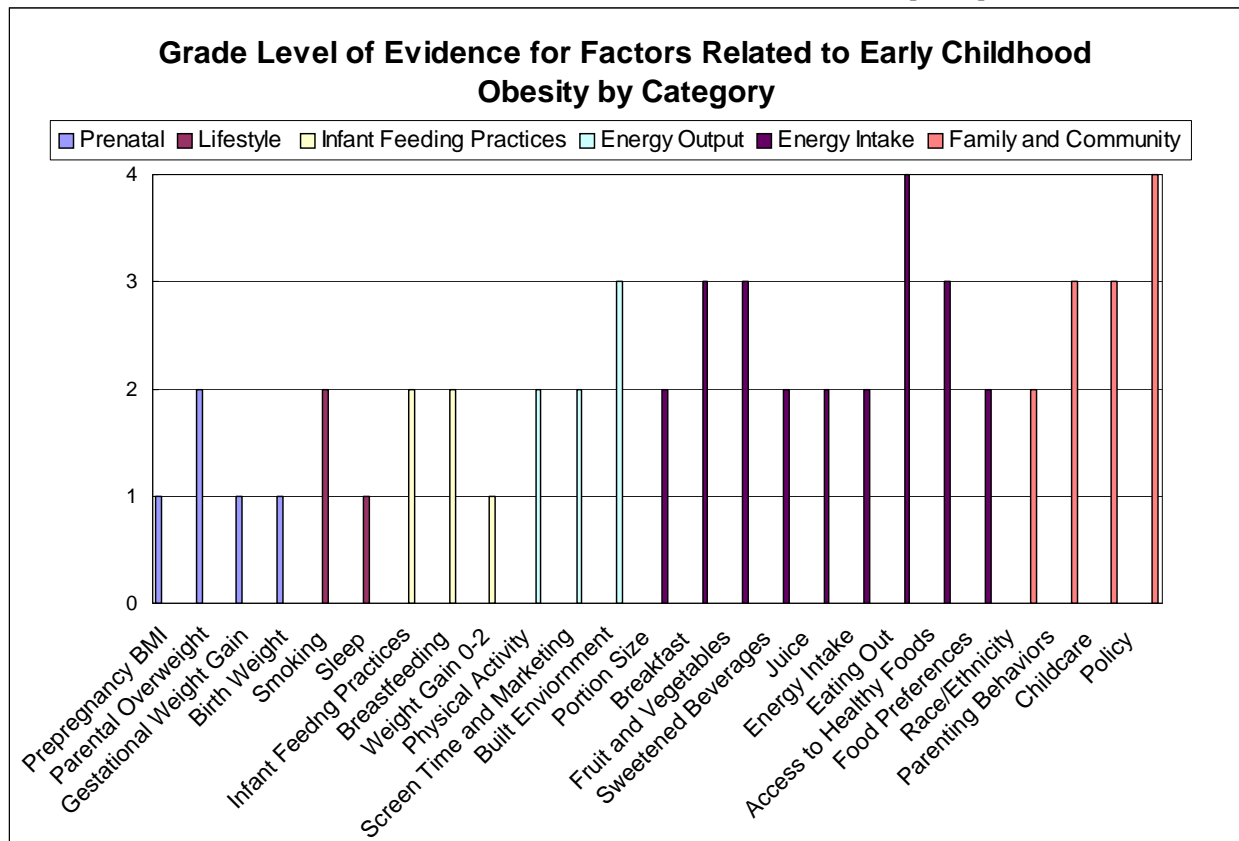
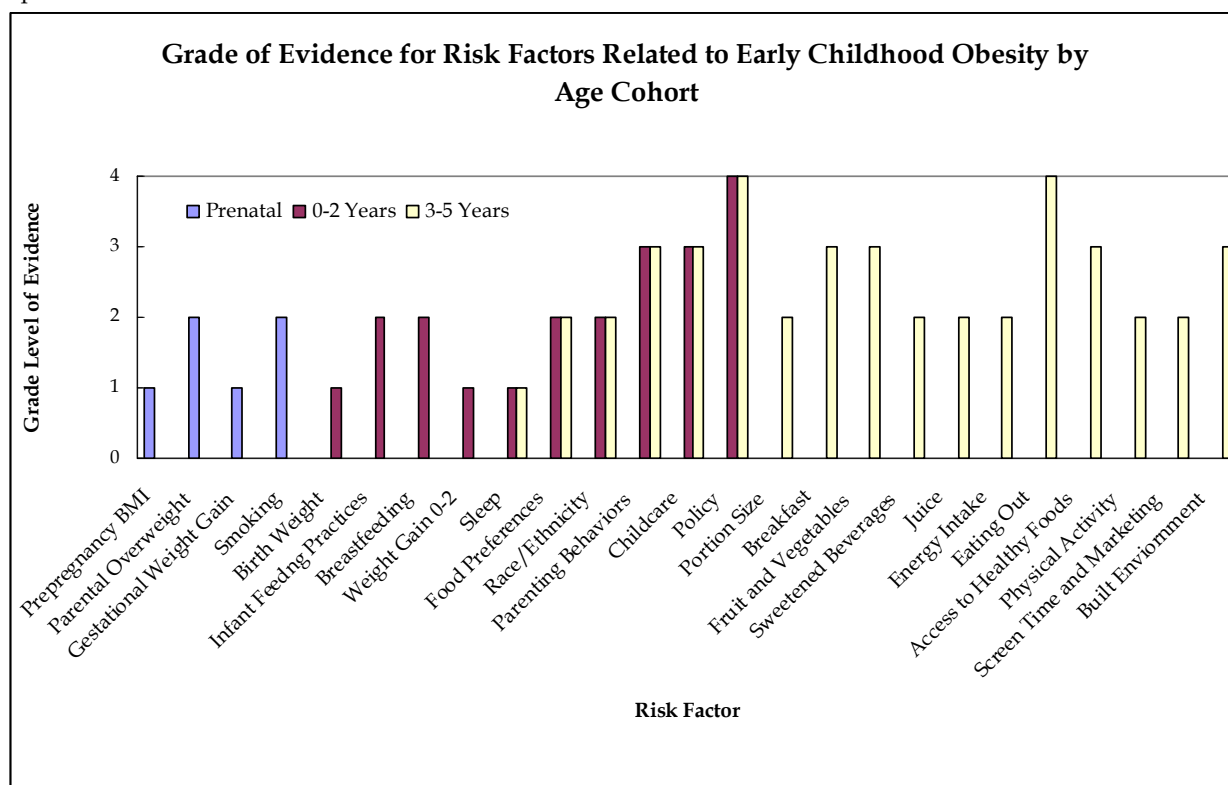


Figure 2. Grade Level of Evidence by Age Cohort

Evidence Levels: Level 1 – Good; Level 2 – Fair; Level 3 – Limited/Weak; Level 4 – Expert Opinion



Phase I Analysis

Findings from Phase I include:

1. Colorado's Child Care Champions Best Practices are comprehensive and detailed when compared with widely accepted guidelines and recommendations.
2. A large, dynamic body of evidence exists regarding early childhood obesity prevention, providing a strong foundation for this work; this is also a limitation due to the inexhaustible nature of the issue.
3. The strongest evidence base for early childhood obesity prevention exists related to the following factors: pre-pregnancy BMI, gestational weight gain, birth weight, weight gain age 0-2 years and sleep.

Phase II: Survey and Inventory of Colorado Efforts

Phase II Methods

In Phase II, two survey tools were developed to inventory early childhood obesity prevention efforts in Colorado. The purpose of the survey process was to identify activities, initiatives, programs and interventions that promote physical activity and healthy eating during early

childhood; coordinate prevention activities, initiatives, programs and interventions; foster collaborations; and leverage resources for an efficient, effective and integrated approach to the obesity problem. The first tool gathered data from selected Colorado funders. The second tool gathered data from program directors and coordinators of state and local, public and private early childhood partners. The electronic survey was distributed to 185 partners, with a total of 64 respondents (25.2%). Of those 64, only 27 (10.6%) provided information about activities which contributed to the survey. Additional data were collected through follow-up phone contacts. Between Nov. 1 and Dec. 7, 2010, key informants (n=25) were contacted via phone to learn more about additional efforts pertaining to early childhood obesity prevention around Colorado.

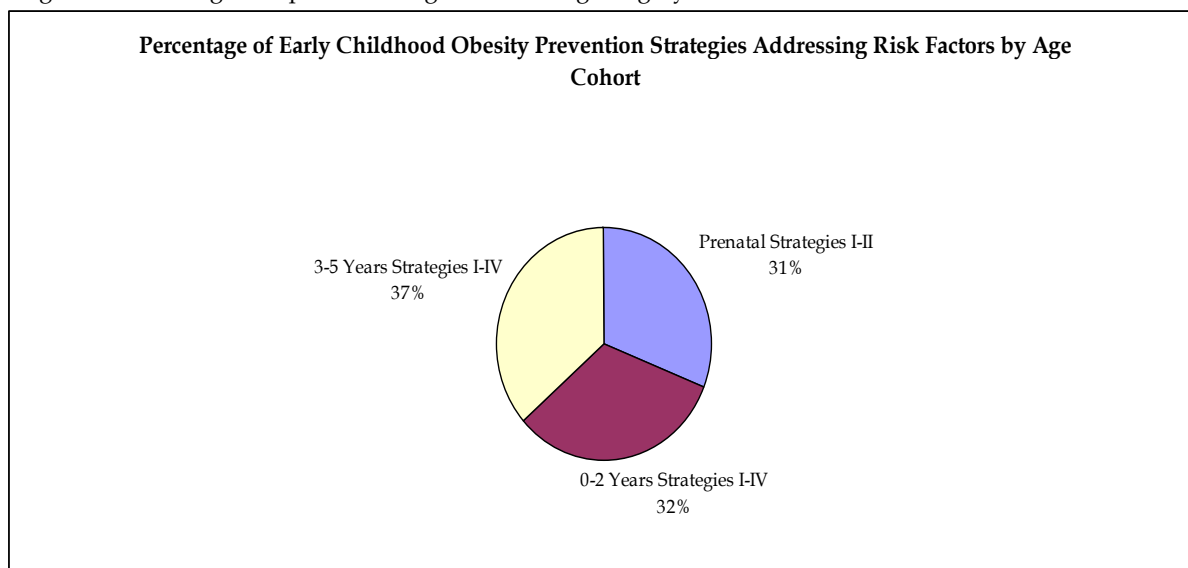
Domer conducted a gap analysis to identify how well existing strategies in Colorado address the factors identified by the literature review as related to early childhood obesity prevention. Domer also analyzed how the reported strategies overlay with the Social Ecological Model (SEM) and the Social Determinants of Health/Health Equity (SDH) framework to inform areas of focus for Colorado. Domer included recommendations for communities and public health to approach the early childhood obesity issue by addressing gaps identified from the Social Ecological and Social Determinants/Health Equity perspective.

Phase II Results and Analysis

Gaps in Addressing Important Factors Related to Early Childhood Obesity Prevention

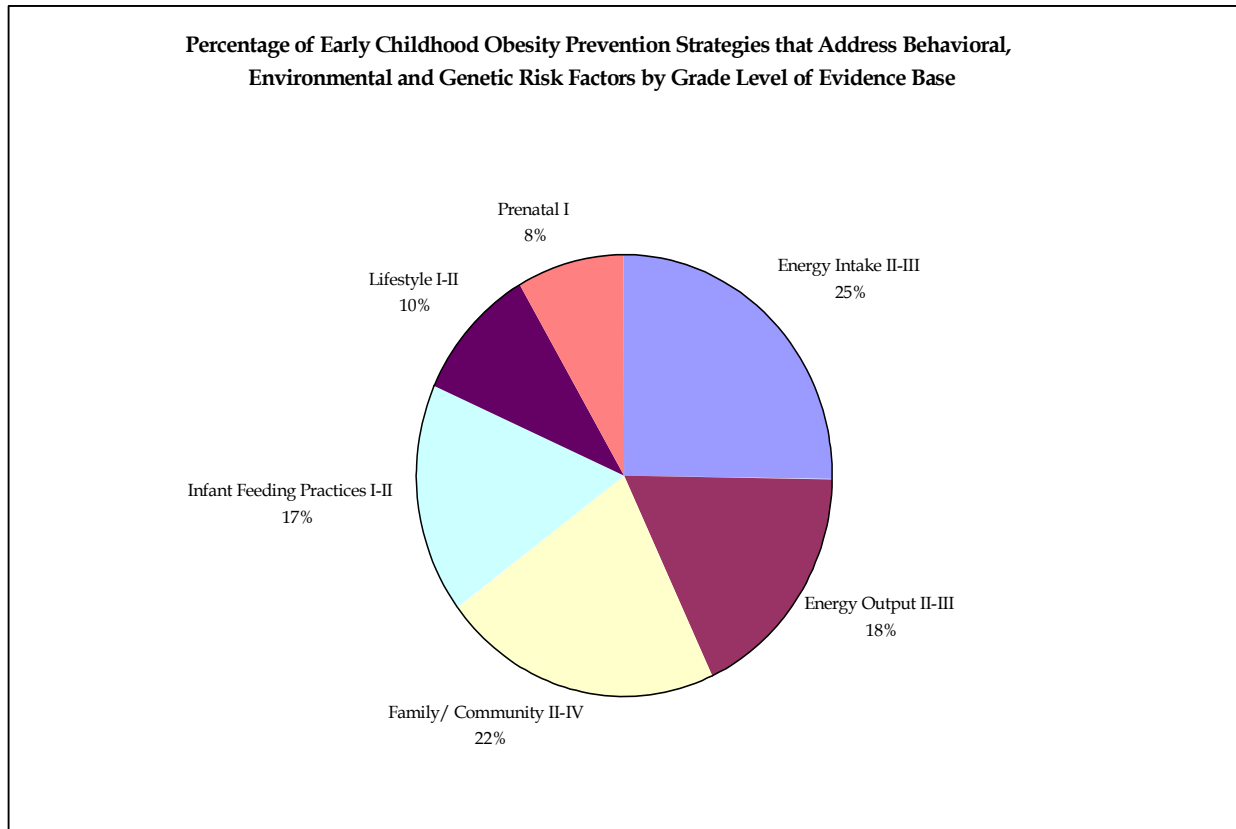
Of the 72 reported early childhood obesity prevention strategies, there were a greater proportion impacting the age 3-5 Years (40%, n=50) and age 0-2 Years (35%, n=44) cohorts compared to the Prenatal (25%, n=32) age cohort as shown in Figure 3.

Figure 3. Percentage of reported strategies addressing category of factors and identified evidence base.



Reported survey results suggest that current efforts related to early childhood obesity prevention may be focused on factors that have a lower grade level of evidence, rather than those factors identified as grade level of I or II (Prenatal, Infant Feeding Practices and Lifestyle, Figure 4).

Figure 4. Percentage of reported strategies addressing factors by age cohort



Social Ecological Model Strategies and Gaps

The **Social Ecological Model** is a framework to examine the multiple effects and interrelatedness of social elements in an environment. All spheres of influences in this model impact the health of the individual. The following summarizes the percentage of reported strategies in Colorado, by age category, that address the spheres of influence of the Social Ecological Model.

Prenatal Strategies – 32 reported strategies

- 96.9% impact individual sphere of influence
- 75% impact the relationship sphere of influence
- 65.6% impact community sphere of influence
- 18.8% impact societal sphere of influence

Strategies for age 0-2 years – 44 reported strategies

- 81.8% impact individual sphere of influence
- 50% impact the relationship sphere of influence
- 65.9% impact the community sphere of influence
- 18.8% impact the societal sphere of influence

Strategies for age 3-5 years – 50 reported strategies

- 86% impact the individual sphere of influence
- 58% impact the relationship sphere of influence
- 70% impact the community sphere of influence
- 20% impact the societal sphere of influence

Recommended strategies for communities and public health to address gaps in the social ecological model:

- Partnering with federal, local and community agencies, universities and businesses
- Modifying promising strategies for multiple settings impacting all populations
- Designing culturally sensitive, evidence-based messages addressing multiple behavioral risk factors
- Determining how the plan will be evaluated
- Developing and implementing a plan that is both feasible and self-sustaining

Social Determinants of Health/Health Equity Framework Strategies and Gaps

“Social determinants of health are life-enhancing resources, such as food supply, housing, economic and social relationships, transportation, education and health care, whose distribution across populations effectively determines length and quality of life.” S. A. James in Promoting Health Equity.

This framework is used to define problems and develop solutions with root causes in mind. The following summarizes the percentage of reported strategies throughout Colorado, by age category, that address social determinants of health.

Strategies for prenatal – 32 reported strategies

- 0% provide economic opportunities
- 100% impact the community and environment
- 75% impact social factors

Strategies for age 0-2 years – 44 reported strategies

- 0% provide economic opportunities
- 97.7% impact the community and environment
- 50% impact social factors

Strategies for age 3-5 years – 50 reported strategies

- 0% provide economic opportunities
- 98% impact the community and environment
- 60% impact social factors

Recommended strategies for communities and public health to address the social determinants of health include the following:

- Advocating for and defining public policy to achieve health equity
- Coordinating interagency efforts for a more synergistic effect
- Creating supportive environments to enable change
- Implementing data collection, monitoring and surveillance
- Providing population based interventions to address individual factors
- Developing community engagement and capacity building

Behavioral Factors Strategies and Gaps

Strategies for prenatal – 32 reported strategies

- 75% address energy intake
- 46.9% address energy output
- 59.4% address family and community factors
- 59.4% address infant feeding
- 31.3% address lifestyle
- 34.4% address the prenatal period

Strategies for age 0-2 years – 44 reported strategies

- 56.8% address energy intake
- 34.1% address energy output
- 68.2% address family and community factors
- 70.5% address infant feeding
- 31.8% address lifestyle
- 18.2% address the prenatal period

Strategies for age 3-5 years – 50 reported strategies

- 80% address energy intake
- 66% address energy output
- 78% address family and community factors
- 24% address infant feeding
- 18% address lifestyle factors

Recommended strategies for communities and public health to address the behavioral factors related to early childhood obesity include:

- Sharing of resources, including handouts, talking points, websites, trainings and/or community events for health care providers, parents and/or caregivers
- Coordinating the development of simple, consistent key messages that can be used in a variety of settings that reach different populations
- Leveraging financial and political resources so that programs with proven success can receive advocacy and legislative support to create permanent funding sources

Limitations of Phase I and Phase II

While the literature review conducted was extensive, the body of evidence related to early childhood obesity prevention is vast and growing. Also, while this study was able to identify factors with the greatest level of evidence based on current research, some factors rated lower due to limited research. Specifically, published studies, which evaluate the impact of policy change on early childhood obesity prevention, are limited.

The reach of the surveys completed was statewide and diverse. However, sampling was too limited (25.2 percent response rate) to give a comprehensive picture of early childhood obesity prevention efforts in Colorado.

Finally, obesity is a complex issue that is not likely to be significantly impacted through a focus on any one factor. Evaluating the evidence related to individual factors provides an opportunity to prioritize factors, though this provides no insight into the interaction of factors.

Phase I and Phase II Discussion

Although not exhaustive or comprehensive, this report informs early childhood obesity prevention efforts in Colorado. This work provides data to inform future targeted efforts to prevent early childhood obesity and improved coordination of Colorado's collective efforts. Data reported here indicate a number of promising efforts that address a variety of factors related to early childhood obesity. In addition, the *White House Task Force on Childhood Obesity Report to the President* provides additional recommendations and guidance. The following are important next steps in applying and continuing this work.

a. Use Evidence to Inform Colorado's Efforts

The CDPHE Early Childhood Obesity Prevention collaborative will share report findings with early childhood and obesity prevention stakeholders in Colorado to inform further work and collaborative efforts in early childhood obesity prevention.

b. Focus on Preconception, Prenatal, and Birth through Age 2 Years

The levels of evidence for early childhood obesity prevention factors are strongest for the preconception, prenatal and birth through age 2 years cohorts. This finding warrants further investigation into how Colorado's obesity efforts can be focused on these age groups.

c. Identify Opportunities and Gaps

As survey results demonstrate, there are a number of early childhood obesity prevention efforts and related efforts occurring in Colorado. Based on these survey findings and the evidence-based factors, next steps must involve the identification of opportunities to build on existing efforts. In light of new evidence and models, it will also be important to identify critical gaps in Colorado's early childhood obesity prevention efforts.

d. Develop Integrative Models

The evidence-based factors and programs contained in the inventory have been cross-walked with the Social Ecological Model and the Social Determinants of Health/Health Equity Framework. These models can be used to ensure that efforts related to early childhood obesity factors are implemented at various levels and focus on root cause.

e. Monitor Research

The research on early childhood obesity prevention is vast and growing. Levels of evidence for some factors rated lower due to inconclusive or limited research. Continuous monitoring of the literature is needed to adequately inform Colorado's future efforts.

Phase III: Early Childhood Obesity Prevention Stakeholder's Meeting

Phase III Methods

As a result of this study, an Early Childhood Obesity Prevention (ECOP) Stakeholder Meeting was held on Jan. 13 and 14, 2011, at Daniels Fund in Denver, Colorado. The purpose of this meeting was to share the findings of the literature review and scan of Colorado prevention efforts in early childhood, and discuss future priorities for Colorado and the most appropriate role for the Colorado Department of Public Health and Environment. Attendees included representatives from several health department divisions, childhood obesity councils, the Lt. Governor's Office, the state Licensing Division, Colorado universities and research programs, and community advocacy and funding organizations.

The CDPHE staff presented the evidence analysis of the 25 factors associated with early childhood overweight and obesity determined by the literature review. During this presentation, participating stakeholders used the Audience Response System (ARS) to respond to questions pertaining to importance, capacity, partnerships, interest, and were asked whether their organizations currently address any of the 25 factors. The group used basic voting methods to suggest what the priority factors should be for Colorado. Group discussions generated stakeholder feedback regarding what role is best for CDPHE in this effort.

Phase III ARS Polling and Voting Results

The following tables summarize the results of the stakeholder responses to questions using the ARS system.

Table 1: Top 10 perceived most important factors to address, according to ARS polling. For each top 10 factor for perceived importance, the table displays the percentage of stakeholders reporting: (1) Their organization currently addresses the factor, (2) Enough partners exist to address the factor, (3) Interest in addressing the factor, and (4) Sufficient capacity to address the factor.

Factor	Important	Organization addresses	Enough Partners address	Interest in Addressing	Capacity to Address
Childcare (n=27)	96%	68%	29%	83%	71%
Pre-preg BMI (n=33)	94%	68%	29%	60%	60%
Screen Time and Marketing (n=31)	94%	33%	6%	50%	31%
Physical Activity (n=30)	93%	70%	47%	87%	73%
Access to Healthy Food (n=29)	93%	66%	15%	69%	52%
Policy (n=28)	93%	50%	9%	62%	65%
Breastfeeding (n=37)	92%	83%	73%	84%	81%
Inf Feeding	89%	84%	67%	92%	87%
Race/Ethnicity	89%	62%	12%	78%	77%
Gest Weight Gain	89%	59%	51%	63%	78%

Table 2: Top 10 factors for which stakeholder organizations are currently conducting activities and addressing from the ARS polling. For each top 10 factor reported as currently addressed by stakeholder organizations, the table displays the percentage of stakeholders reporting: (1) Perceived high importance of the factor, (2) Interest in addressing the factor (3) Sufficient capacity to address the factor, and (4) Enough partners exist to address the factor.

Factor	Organization Addresses	Important	Interest	Capacity	Enough Partners Address
Fruit & Vegetable intake	88%	84%	82%	81%	71%
Infant Feeding	84%	89%	92%	87%	67%
Breastfeeding	83%	92%	84%	81%	73%
Weight Gain 0-2 years	80%	86%	82%	84%	43%
Sweetened Beverages	77%	86%	79%	79%	57%
Juice Intake	73%	61%	53%	69%	79%
Physical Activity	70%	93%	87%	73%	47%
Parenting Behaviors	68%	81%	75%	69%	13%
Childcare	68%	96%	83%	71%	29%
Pre-preg BMI	68%	94%	60%	60%	29%

Table 3: Top 10 factors for which enough partners exist to address them from the ARS polling. For each top 10 factor for which enough partners exist to address the factor, the table displays the percentage of stakeholders reporting: (1) Perceived high importance of the factor, (2) Interest in addressing the factor (3) Their organization currently addresses the factor, and (4) Sufficient capacity to address the factor.

Factor	Enough Partners addressing	Important	Interest	Organization Addresses	Capacity to Address
Juice	79%	61%	53%	73%	69%
Breastfeeding	73%	92%	84%	83%	81%
Fruit & Vegetable intake	71%	84%	82%	88%	81%
Smoking	71%	66%	39%	53%	62%
Energy Intake	67%	64%	59%	61%	70%
Infant Feeding	67%	89%	92%	67%	87%
Birth weight	65%	70%	49%	44%	48%
Breakfast	61%	68%	35%	52%	70%
Sweetened Beverages	57%	86%	79%	77%	79%
Gestational weight gain	51%	89%	63%	59%	78%

Table 4: Top 10 factors of greatest interest for their organization to address from the ARS polling. For each top 10 factor of greatest interest, the table displays the percentage of stakeholders reporting: (1) Perceived high importance of the factor, (2) Their organization currently addresses the factor, (3) Enough partners exist to address the factor, and (4) Sufficient capacity to address the factor.

Factor	Interest	Important	Organization addresses	Enough Partners addressing	Capacity to Address
Infant Feeding	92%	89%	84%	67%	87%
Physical Activity	87%	93%	70%	47%	73%
Breastfeeding	84%	92%	83%	73%	81%
Childcare	83%	96%	68%	29%	71%
Fruit & Vegetable intake	82%	84%	88%	71%	81%
Weight Gain 0-2 years	82%	86%	80%	43%	84%
Sweetened Beverages	79%	86%	77%	57%	79%
Race/Ethnicity	78%	89%	62%	12%	77%
Parenting Behaviors	75%	81%	68%	13%	69%
Food Preferences	71%	66%	50%	30%	62%

Table 5: Top 10 factors for which sufficient capacity exists to address them, from the ARS polling. For each top 10 factor for sufficient capacity, the table displays the percentage of stakeholders reporting: (1) Perceived high importance of the factor, (2) Interest in addressing the factor, (3) Their organization currently addresses the factor, and (4) Enough partners exist to address the factor.

Factor	Capacity to Address	Important	Interest	Organization Addresses	Enough Partners addressing
Infant Feeding	87%	89%	92%	67%	67%
Weight Gain 0-2 years	84%	86%	82%	80%	43%
Fruit & Vegetable intake	81%	84%	82%	88%	71%
Breastfeeding	81%	92%	84%	83%	73%
Sweetened Beverages	79%	86%	79%	77%	57%
Gestational weight gain	78%	89%	63%	59%	51%
Race/Ethnicity	77%	78%	89%	62%	12%
Physical Activity	73%	93%	87%	70%	47%
Childcare	71%	96%	83%	68%	29%
Energy Intake	70%	64%	59%	61%	67%

After learning about the evidence base and survey results for each of the 25 factors, each participant voted on which factors are the most important priorities on which Colorado should focus on. Based on this vote, the following eight factors were identified to be the highest priority for Colorado:

- A. Child care (Level III Grade)
- B. Policy (Level IV Grade)
- C. Physical activity (Level II Grade)
- D. Parenting behaviors (Level II Grade)
- E. Access to healthy food (Level III Grade)
- F. Breastfeeding (Level II Grade)
- G. Gestational weight gain (Level I Grade)
- H. Weight gain age 0-2 years (Level I Grade)

Phase III Stakeholder Group Discussion Key Results

Small and large group discussions generated valuable stakeholder input to assist CDPHE in determining the focus of its work in early childhood obesity prevention. Stakeholder comments pertaining to the two major questions posed during group discussions are listed below:

What factors are missing in our analysis related to Early Childhood Obesity Prevention?

- a. Connection with health care reform
- b. CDPHE staff person on ECOP
- c. Consistent messaging, connecting, prioritization. Designated person to do this.
- d. More information from CDPHE partners on current activities
- e. Keeping conversation and information flowing
- f. Keeping public health perspective
- g. Adding Social Determinants/Health Equity

What roles seem appropriate for CDPHE in this effort?

- a. Ensure transportation options to local public health sites
- b. CDPHE staff person to focus on prevention efforts (internal/external)
- c. Employee wellness
- d. Start with prenatal messages
- e. Ensure licensing standards are supportive
- f. Consistent messaging
- g. Role in child care policy development – writing and enforcing policies
- h. Training and education
- i. Coordinating efforts and keeping state, local and community partners informed
- j. Subject matter experts – coordination of information and what is done with the information (related to early childhood obesity in the state)
- k. Cross-over and partnering of a broader advisory group

CONCLUSION

Good health in the early years of a child's life provides a foundation for a healthy lifestyle and academic success throughout life. Childhood obesity threatens long-term health and poses a significant challenge to families and those who care for young children. It is becoming clear that efforts to combat childhood obesity must focus on the earliest stages of life with evidence-based interventions and components that address root causes.

This report summarizes the evidence-supporting factors associated with early childhood obesity; describes statewide efforts already underway; identifies gaps in addressing factors, levels of influence that impact health and key areas of root causes; summarizes areas of priorities determined by key stakeholders; and provides recommendations for improved coordination and next steps for Colorado's early childhood obesity efforts.

Phase I involved a review of best practices and current literature to identify the evidence base and level for risk factors, recommendations and guidelines related to early childhood obesity. The analysis uncovered a large, dynamic body of evidence providing a solid foundation for future efforts. The levels of evidence for early childhood obesity prevention factors are strongest for the preconception, prenatal and birth through age 2 years cohorts.

Phase II involved a survey of activities, initiatives, programs and interventions that promote physical activity and healthy eating during early childhood. Many promising efforts were identified, but the survey suggests that overall, many of these efforts may be focused on factors with low levels of evidence. To improve and target childhood obesity prevention efforts, we must now share the evidence we've gathered, identify opportunities and gaps in current initiatives, focus on a child's earliest years and develop integrated prevention models that include social, community and environmental factors.

Phase III involved a stakeholder meeting to share the findings of the literature review and scan of Colorado prevention efforts in early childhood, and discuss future priorities for Colorado and the most appropriate role for the Colorado Department of Public Health and Environment in this effort. Stakeholders prioritized the following factors for Colorado: Child care, policy,

physical activity, parenting behaviors, access to healthy food, breastfeeding, gestational weight gain, and weight gain age 0-2 years. Common stakeholder themes for the role of the Colorado Department of Public Health and Environment were to serve as the subject matter expert, promote consistent messaging, support healthy child care licensing standards, prioritize early childhood obesity prevention, designate a point person to coordinate efforts and support healthy policies.

NEXT STEPS

Obesity has been selected as one of Colorado's 10 Winnable Battles. These 10 Winnable Battles provide the greatest opportunities for ensuring the health of Colorado's citizens and visitors, and the improvement and protection of Colorado's environment. Furthermore, the prevention of obesity among all children, age birth to 5 years has been identified as a Maternal and Child Health Program priority for Colorado.

Based upon the vast body of evidence, information and stakeholder input obtained during this project, the leadership and staff of the Colorado Department of Public Health and Environment (CDPHE), Prevention Services Division established the general direction and role of the Department for early childhood obesity prevention. The current focus of CDPHE's work related to early childhood obesity prevention is to:

- Identify and implement targeted interventions in CDPHE community-based efforts
- Align early childhood obesity prevention activities with internal programs
- Prioritize factors and provide content for effective and consistent messaging
- Support and expand breastfeeding interventions
- Strategically partner with external organizations
- Collect, analyze and disseminate the evidence base for early childhood obesity prevention
- Collect, analyze and disseminate data on early childhood obesity prevention

The Colorado Department of Public Health and Environment has also created and staffed a full-time position dedicated to early childhood obesity prevention to lead the efforts listed above.

The leadership team and staff at CDPHE look forward to working collaboratively across Colorado to prevent and reduce early childhood obesity and ensure long and healthy lives for future generations of Coloradans.

The Colorado Department of Public Health and Environment extends deepest appreciation to all stakeholders and partners who participated in the surveys, key informant interviews and the stakeholder meeting.

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